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The A.S.T.E. Journal

OFFICIAL PUBLICATION OF THE

AMERICAN SOCIETY OF TOOL ENGINEERS

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No. 341

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Fig. 1 — At right — Special Sundstrand-built machine for a piston ring manufacturer.

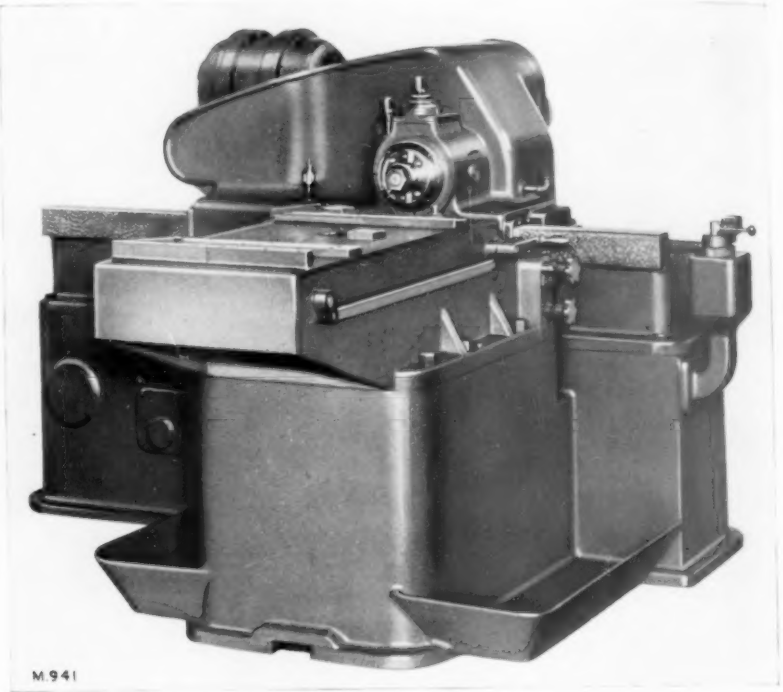
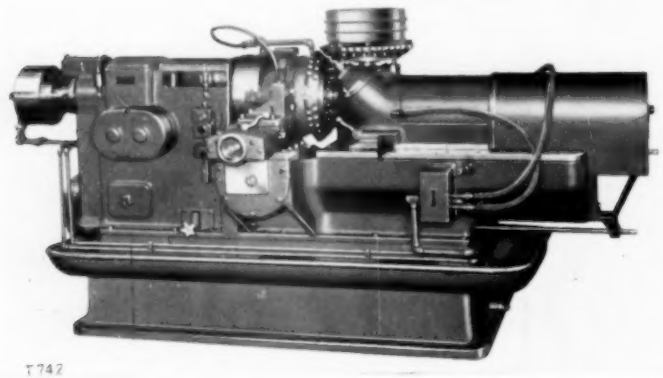
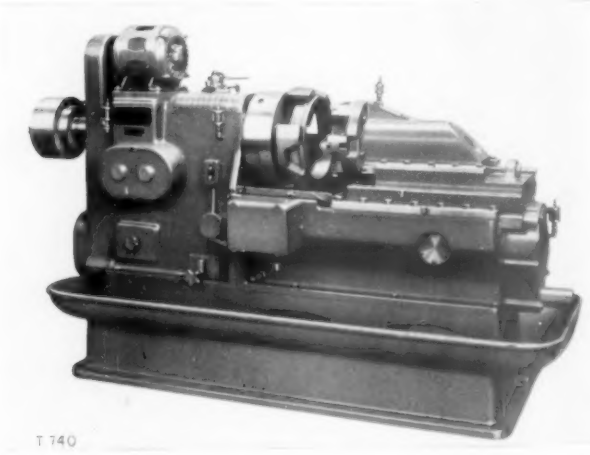


Fig. 2—Above—Sundstrand special travelling head milling machine.

Fig. 4—Below—Special lathe for boring brake drums after splitting on machine shown in Fig. 2.

Fig. 3—Below—Special Sundstrand lathe, with turret head, for splitting brake-drum castings.





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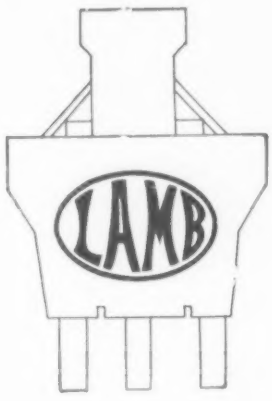

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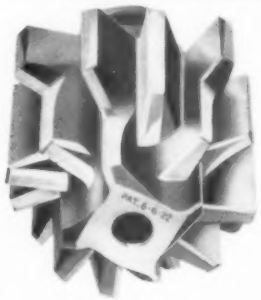

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DRAWING or DESIGN WHICH?

By Anders Jansson*

Recent times have brought many old timers like Tom, of this incident, back on the "board. Formerly Master Mechanics, Chief Tool Engineers and Chief Designers--are these men worth as much today on the board as their younger colleagues? Read what Tom says--see if you agree.

Editor

WE'LL call him Tom, which wasn't his name. An old timer, experienced in design and with a good shop training, he had been considered a valuable man in the organizations he had served in the heyday of prosperity. Then came the depression, and Tom fell back on fundamentals. In common with the host of business and professional men whose income had been cut off, he drew on his reserves, which, in his case, was his experience. He reverted to tool design.

Now, intent on the design of a fixture, he regarded it critically, then, dissatisfied, erased a detail and altered it. "There!" nodding approval. "That ought to do the trick."

He took the drawing to the chief, who was engaged with a salesman, and quietly awaited a new assignment. He glanced at a drawing just laid down by another designer, and critically compared it with his own. "Neat as a copper plate etching," he commented, to himself, "while mine looks as if the paper wouldn't stand another pass of the eraser. But, when it comes to production and machining, mine's the better tool."

In part, his thoughts were shared by the chief, who, when Tom had gone back to his board, compared the two drawings for his visitor's benefit. "Look at that damned thing!" he rasped. "Looks like the guy didn't know what he was doing, and yet——"

"And yet it's a good design," smiled the salesman. "Better than that one. They'll both look as good on the blue print, Bill."

"Yes, but I'm not selling the blue print to the customer; I'm selling him the original. Imagine laying that down in front of Steve for approval! Every time I show him one of Tom's drawings I've got to apologize."

"But does Steve approve 'em?" curiously. Steve was the "big shot" over at the Consolidated Motors.

"Ye-as," grudingly. "Oh, the design's okay. It just looks lousy, that's all. Besides, it cuts into the time, and then there's a squawk from the customer."

"I wonder," thoughtfully, "I'll bet if you averaged it up, Tom would compare favorably with the rest of your gang. And if his designs are good, and his average time okay, that fills the bill, doesn't it? But why don't you have a talk with him, and get his point of view? Do it now. I'm curious to hear his side of it."

"Tom, called on the carpet, stated his version frankly. "Yes, I know my drawings look rotten," he said. "But, I designed tools for years before I jumped into bigger stuff, and I've yet to recall either a tool or a special machine that didn't better the expected production. That is, when I've been left to my own devices.

"As a matter of fact, this laying out on bond paper cramps my style. It slows me up. Give me a sheet of duplex, where I can bite my pencil into it, and I'll have it laid out and traced in half the time it takes me now. I know what I'm talking about—at least, I know my own method of working.

"As for the looks of the drawings—well, it's not the *drawing* that's going to produce parts; it's the fixture. And if I see a better way of doing the job, or a means of making the fixture easier to build or more convenient for the operator, why not give the customer the benefit of a better idea? Still, I see your side of it, and I'll try to mend my ways. Only, for gosh's sake get this drawing away from me before I get a chance to think of an improvement."

"Okay, Tom," good naturedly. "Only, there's a lot of places where a sloppy looking drawing would cost you your job. Of course, I know that you know your stuff, but even so, a man less brilliant, or rather, a man with a single track mind and sticking to just one idea could easily beat you out in competition for jobs. That's one angle of the game you might slant at."

"Yeah," Tom admitted. "Just the same, I've spent the best part of my life doing things that the single track man couldn't handle. And I still insist that the product's the thing, not the drawing. Not that I think I'm all right and it's just the rest of the world that's crazy. As I said, I'll try to reform, starting now."

The chief waited until Tom was out of earshot. "Well, what do you think about it?" he asked the salesman.

"Well, if Tom was designing tools for me, I'd just as soon he didn't reform," was the smiling reply. "But, 'the customer be pleased,, as Vanderbilt didn't say. Wonder what the boys higher up would say about it?"

*A.S.T.E. Member

RICHEST SULTAN VISITS MODERN PLANT

His Highness Sir Ibrahim (right), Sultan of the State and Territories of Johore, was delighted with mass production methods seen in the Hupp plant, Detroit, as he was conducted by V. H. Wilcox, Export Manager (left) and J. C. Fyke, Efficiency Engineer.

by ROY T. BRAMSON

TOOL ENGINEERING came under the eye of full-fledged royalty recently in Detroit, when the Sultan of Johore, reputed to be the richest Sultan in the world, visited the Hupmobile plant. His Highness Sir Ibrahim, Sultan and Sovereign Ruler of the State and Territories of Johore, has two hobbies—good roads and Hupmobiles. At present there are five Hupmobiles in the royal garage of the Sultan, so it was quite natural that his royal highness should visit the plant of the Hupp Motor Corporation in Detroit.

Upon arrival at the plant, his Highness expressed a desire to see the plant and something of the methods used in modern production—in twenty minutes. He stayed nearly two hours and would have stayed longer, had not his time been accounted for far in advance. In these two hours he asked many questions that any tool engineer would have found amusing, yet because of their very simplicity were most difficult to answer. In this connection it must be remembered that mass production is unknown in the country of The Sultan of Johore. There everything is done by hand—there is little thought of or use for labor saving devices. Why should there be, one might ask. Labor can be had for as little as twenty-five cents a day, and strikes are unknown.

His Highness Asks Some Questions

To J. C. Fyke, Efficiency Engineer, and other Hupp factory officials fell the good fortune of showing the Oriental Potentate through the modern automobile plant and explaining some of the methods of mass production, typical of modern methods used throughout the country. Asked what appeared to impress the Sultan most, Mr. Fkye stated, "I could see that in the back of his mind, he wondered why we had so many large machines to take the place of 'so many men'". He wanted to know, said Mr. Fyke, why a lot of the parts of an automobile couldn't be made by hand. "Couldn't they be made just as well," asked His Highness, "if made by hand?" Mr. Fyke's answer showed that fenders, for instance, the parts in which the Sultan was interested at the moment, could be made by hand, but at great cost and that in all probability no two of the hand-made fenders would be exactly alike. The interchangeability of parts, essential to mass production, while not so highly important on fenders, was an integral factor of economic and modern production methods that seemingly, had not occurred to His Highness.

Typical of the comfort, beauty and durability of the modern American motor car, is the new Air-minded Hupp made possible by mass production and the ingenuity of the tool engineer, pictured above with The Sultan of Johore.

Air-minded cars, though not new to the royal visitor, held much of his attention. He had seen, he said, many of the European makes which have long been stream-lined, and reminded his hosts of the old adage to the effect that the thing of greatest utility has the greatest beauty. His interest was particularly aroused by the new interpretations of valuations of raw materials and total weight of finished cars. The scientific selection of alloys, reducing car weight, the strength and stamina imparted to certain important parts by the use of alloys and the operating efficiency resulting from the use of these stronger and lighter parts were of special interest.

While on the subject of stream-lined or air-minded cars, the far-eastern dignitary—supposedly ignorant of occidental methods and facilities—seemed constrained to give his hosts something of a shock by some of the radical changes suggested by further questions he asked. Answers to most of these questions involved theory that tool and designing engineers have not yet had an opportunity to test, but which would provide an even greater opportunity for the ingenuity and skill of all technicians in design and production. Some of these questions asked by His Highness were "Why don't you make the body of your car in one piece of metal? Is it impossible to mount all four of the wheels on the corners of the body?" Asked if he meant omitting the axles, His Highness, replied, "Yes."

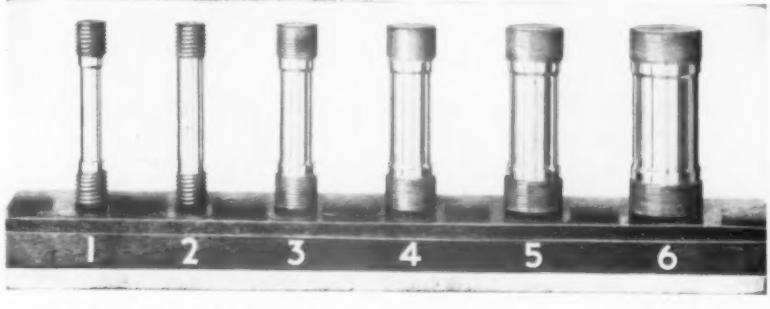
The modern wheels were another source of interest to His Highness. In looking at them, he wondered he said why they could not be made in one piece—tires and all. In further explanation of what he meant he said "Why can't the wheels be molded —wheels, tires and hubs all in one?" Asked what materials he would suggest, His Highness, suggested "Re-inforced rubber with ball bearings molded in place."

As he was about to leave the plant, His Highness was handed a telegram from the Mayor of New York advising him that a suite of fifteen rooms had been reserved in The Waldorf-Astoria for his visit in New York City. Calling for a stenographer His Highness, dictated briefly: "While in Hollywood, did not have time to acquire a harem. Four rooms will be quite sufficient for my needs." Laughingly he had still a further question or two to ask his hosts, he said. "How many men would be required to build one of your cars in a day, at a cost of say 75c an hour, and assuming your American eight hour day? How much would a car built under such a system cost?" "If I (His Highness) had your plant in Johore and paid my men twenty-five cents a day would it cost me one twenty-fourth as much to build a Hupmobile?"

Royalty Welcomed Royally—Sir Ibrahim, Sultan of Johore (left) and his Sultana, the former Mrs. Helen Wilson of Scotland, were snapped by the cameramen in San Francisco as they alighted from the N.Y.K. liner ChichibuMaru. At A Century of Progress in Chicago, these royal visitors were accorded the full 21 gun salute of full-fledged royalty. Shown above, left to right, San Francisco Police Chief Quinn, Mayor Angelo Rossi, Joe Murphy of The American Trust Company and H. R. Roberts, Pacific Coast Sales Manager for Hupmobile. From Johore, the domain of His Highness, come many of the wild animals of Frank Buck, who counts among his friends the Johore Sultan.

Implying that an affirmative answer to his last question might be the germ of some real competition, The Sultan and Sovereign Ruler of the State and Territories of Johore took his leave not waiting for an answer to his last few queries. While these queries were made by His Highness in jest, they may yet foretell realities of the not too distant future.

NOTE.—*Tool Engineers who have ideas about answers to The Sultan's last few queries are invited to send them to The A.S.T.E. Journal.*



A simple exhibit, which graphically portrayed to His Highness, how alloys reduce bulk and weight in the modern motor car. These six materials are equal in tensile strength. Left to right Chrome Nickel Steel; "10-50" Carbon Steel; "10-20" Carbon Steel; Ordinary screw stock; Malleable Iron, and Cast Iron.

BORING BARS - HISTORY

By CHARLES F. STAPLES*

After the introduction of the engine lathe proper in about the middle of the 17th century boring bars and lathes have been companions up to the modern mechanical era. However, up until then boring bars were mostly employed in boring wood or bronze cylinders for pumps—especially fire engine pumps. This dates back to the last century of the Roman era.

A rather curious fact that may be surprising to most technical minds is that cannons or guns, although 400 years old, were not bored prior to modern times.

There are two classes of boring bars or tools in common use; those employed in lathes, for example, in which case the work revolves, and the others, which are those with which this article deals—in which the boring bar revolves.

The author's particular interest in just this class of boring tools is obviously because of the revived interest in boring bars caused by the new carbide materials as cutting mediums.

When the tool engineer mentions boring bars he immediately thinks of a rather inefficient tool especially the frailer ones with a single or double lip cutter—some are one ended; that is, supported only at one end, and some are supported at both ends. Obviously the first is only designed for short or shallow bores, whereas the latter may be used to full effect about half their length, Figs. 1 and 2.

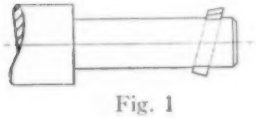


Fig. 1

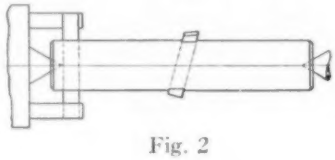


Fig. 2

Despite the frailty of boring bars in general, they have several advantages. These are, first, their faculty of producing a perfectly round hole. This statement may be verified by a study of sketch Fig. 2.

It matters not whether the boring bar body runs true for the cutting lip will describe a circle around a mathematical axis. This also holds true if the cutter is double ended. In the first case, one might imagine a radius describing a circle; in the second, a diameter. Secondly, the tools may be ground in such a fashion that bore is perfectly smooth. Thirdly, it is probably the simplest method to produce a perfectly straight bore.

New Carbides Revive Interest

As mentioned above, a great deal of the revived interest in boring bar practice is due to the use of the new carbide materials such as tungsten-carbide. For example: tungsten-carbide is a tremendously efficient cutting tool for cast iron, bronzes, and so on, but requires high speed and low feed. But to tungsten-carbide cutting speeds for cast iron now start at 250 feet per minute.

It is perfectly clear that in most cases a boring tool provided with more than one or two cutting lips would be somewhat inefficient, since the question of disposing of the chips at this rate of speed becomes a real problem. Consequently—as far as the theoretical boring bar goes, it seems the practical tool in connection with tungsten-carbide. However, there are other angles to the problem. For instance, the mentioned frailty, springiness of the tool, and the fixture with which the bar is to be used.

An all too frequent trouble with boring bars is their tendency to bend, in which case they do not bore a straight hole. To prevent this difficulty it is well to build the bar of a steel with a soft core—normalize after rough turning, and then finally carborize; then grind, chrome-plate, and finish grind.

It is not so difficult to keep the tool perfectly straight before the cutters are inserted. The real problem enters when fastening the cutters—that is where the question of frailty appears in bars up to 1¾" diameter.

Some Examples

Any pressure by fastening screws or wedges must necessarily be exerted along the mathematical axis—or as near to it as possible.

To illustrate:

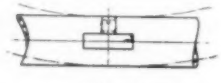


Fig. 3

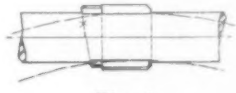


Fig. 4

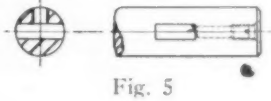


Fig. 5

Fig. 3 represents a boring bar in which the cutter is fastened by a set screw, and dotted line shows in exaggeration the bending effect due to tightening the screw.

Fig. 4 shows a different fixing method by means of a wedge. It is quite impossible to make a wedge which would not have what is called a "high spot", and it follows that its pressure would not be evenly distributed. Again we are confronted with a bending effect.

Many other methods might be mentioned, but all have more or less flaws of the same nature.

*Member A.S.T.E.

If the boring bar carries only one cutter it may be fastened from the end with a rather good result as per Fig. 5.

In the author's opinion, there is one method which seemingly overcomes all these troubles.

Fig. 6 gives a clear idea of this system. "A" is a steel block of same thickness as the slot in the boring bar and has a hole drilled in its full length. The hole is threaded in both ends for set screws. In the space between the set screws is a wedge which in turn actuates plunger "C". The set screw to the right fastens the assembly and the set screw at left is for dislodging wedge "B". It will be noticed that all pressure is perfectly central.

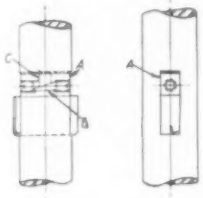


Fig. 6

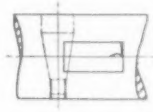


Fig. 7

This system works satisfactorily and has the advantage that it may be used on either side of cutter or with any number of cutters in the bar. In heavier boring bars from 2" diameter and up, a cross pin such as is shown in Fig. 7 appears to be entirely satisfactory.

Fixtures

Up until very recently the general practice has been to work boring bars horizontally, however, largely due to carbide metals, boring bars are now quite commonly used vertically. Both methods have their advantages and disadvantages. The vertical system seems in the writer's opinion, to be the better.

In order to utilize tungsten-carbide in boring a crank case or a gear case, always assuming the material is cast iron, it is necessary to run it at very high speed. Another prerequisite of tungsten-carbide is that all vibrations or looseness due for example, to gears or running fits, is absolutely excluded. The particular bearing clearance may be so minute that only an indicator can register it, yet even that is too much and the tool edge will surely crumble. It is quite impossible to have the boring bar bearings a wring-tight fit and still run the bar at is proper speed.

The recourse is to use rotating bearings—that is, bushings in which the boring bar fits closely and rotate with the bar, as was fully illustrated in the earlier article in the January A.S.T.E. Journal. By supporting a boring bar in this method roughing and finishing cuts may be performed simultaneously. Crank cases, and such like, are usually bored horizontally, and from 2 to 6 bearings at a time.

Much the same might be said about the vertical method—but this system deserves a few remarks on its own account. While horizontal boring nearly always requires a specially built tool or perhaps a converted lathe, the vertical method is splendidly done in an ordinary drill press. In the latter instances the rotating bushings referred to are used much in the same fashion as drill bushings in a jig. However, it is well to say at this point, that such a boring job should not be done without a front pilot. Fortunately, the rotating bushing system lends itself to just such a method.

Much could be said regarding the advantages of vertical boring versus horizontal, but two or three reasons suffice. A certain minute sag in the horizontal bar is avoided. The disposal of chips, a matter of the utmost importance, is almost automatically accomplished. Finally, the machine tool equipment is far cheaper and the floor space many times less.

NOTE.—*This is the second article of this series. The last, to appear in an early issue of the A.S.T.E. Journal, will concern itself with boring cutters.*

Meet Our Members

E. R. DELUIZ

E. R. DeLuiz is well known to tool engineers of the Detroit area. Although he was born in Boston, Massachusetts, and spent the greater part of his earlier years in the east, Mr. DeLuiz has made Michigan his home for the past twenty-two years.

In 1911 he came to Detroit, joining the Ford Motor Company as assistant head of machine designing department. In 1918 he served the Kelvinator Corporation in the capacity of Chief Engineer. In 1922 he joined the Copeland Products Company in the same capacity, where he designed, developed and put their products into production. Later Mr. DeLuiz joined the Studebaker organization, serving in the capacity of tool engineer, having charge of Rockne production and tooling.

Mr. DeLuiz has hobbies, chief of which is his interest in refrigeration mechanics. He is well known for his recent invention of an expansion valve for refrigerators. This project is now occupying his time. Another hobby of Mr. DeLuiz is his interest in the Society, which he serves as Director. He was formerly a member of the publications committee.

BAITS ADVANCED BY HUDSON MOTOR

Stuart G. Baits, for some years chief engineer with the Hudson Motor Car Company is advanced to Assistant General Maager.

Announcement was recently made by Roy D. Chapin, president of the company. Mr. Baits has been with Hudson many years and will continue his duties as head of the engineering department.

A.S.T.E. Annual Outing Highly Successful

Reported by Clarence Erickson

The shady retreats of Maple Grove Park were the scene of the second annual A.S.T.E. outing held June 24th. The three-hundred, or more people present, made up of A.S.T.E. members and their families, will attest that the affair was a success as to sociability and a general good time for all.

Many of us received our first laugh of the day upon being accosted by Mr. George Crookston (who, incidentally hails from Edinbur-r-r-r-rgh) who was serving in the double capacity of ticket seller and collector. Mr. Crookston held in one hand a large bundle of tickets, but when we presented him our quarter, to our surprise, we received no pasteboard. The gentleman answered our bewildered looks with, "Oh, I'm collecting them too."

The innumerable athletic events and contests which contributed so much to the hilarity of the day, were opened with a playground base ball game between the Seniors and the Juniors. This game was stiffly and at times hotly contested. The Seniors were out to gain revenge for their defeat at the hands of the Juniors in last year's game, while the Juniors wished to retain their lead. In addition, adding greatly to the zest of the struggle, was the circumstance that the loosers were to buy refreshments with which to fete the winners.

For a while it looked as though the Seniors were to be successful in putting the upstart Juniors in their place. The Seniors hammered out three runs in the first inning, and crossed the plate once more in the second. Meanwhile, Mr. Carpenter, our President, showed himself a real leader by doing mound duty, and hurling with such effect that the Junior bats were almost completely silenced. Three sparkling double plays executed by the Senior infield thrilled the cheering spectators and mowed the Juniors from the base paths in the early innings.

The sixth inning came around with the score 4 to 2 in favor of the Seniors, and several of the Juniors were observed to be counting their change with anxious countenances. But the Juniors, determined to do or die, rubbed their hands in the dust and gritted their teeth as they came up to bat, and rallied to take the lead 5 to 4. But the Seniors went down fighting, and threatened to tie the score in their half of the inning. Herbert Royle, who had been pitching for the Juniors voluntarily stepped out of the box and called in a long, lanky young fellow to relieve him. Lew Wokas—that really is his name, although some of the luckless Seniors seemed to think he was Lefty Grove in disguise—blighted the budding Senior rally by striking out two men to retire the side without any runs being scored. The game ended without any further scoring, and the Juniors again were the victors, although some of the Seniors were overheard to ex-

(*Continued on page 14*)

THIS MONTH'S COVER

"BEARING-IZING"

The demand for increased accuracy and finish which has faced tool engineers, brought about the development of the process termed "Bearing-izing" by the Cogsdill Manufacturing Co., Detroit. The process employs a tool embodying a shank on which a series of cam surfaces are constructed. This section is enclosed in a cage free to rotate about the cams and carrying an equivalent number of small rolls.

Running the tool at high speed the cam surfaces drive the rolls out against the bore of the part with a peening action which condenses and hardens slightly the metal structure. The grain flow produced closes the pores of the material, removes the high spots, feed marks, etc., and leaves a mirror burnished surface with increased bearing area, improving the lubrication conditions resulting in lessened friction, freedom from scoring and the initial running in wear.

"Bearing-izing" is being used on a variety of parts including water pump and fan bearings, valve stem and valve lifter guides, piston pin holes, compressor cylinders, crank-shaft and connecting rod bores, hydraulic valves, shock absorbers, etc. Accuracy and uniformity of size within .0002" with a burnished surface are produced under high production conditions.

The process is being used following reaming, precision boring, grinding and honing operations, and is extremely rapid, as only one pass of the tool is necessary. Very little power is required. Blows at the rate of 20,000 and upward per minute are applied to the surface of the bore. Tools are in use in holes ¼" diameter and larger, there being no limit to size as far as the principle of the tool is concerned. The smaller tools are of the solid cam type, the change in size within certain limits being accomplished by changing the diameter of the peening rolls; rolls .0001" larger in diameter producing a tool .0002" larger etc.

The refrigerator manufacturer in whose plant the photograph, on the cover, was made, reports a much improved quality of product at a reduced manufacturing cost. The percentage of rebuilding formerly necessary in order to meet the compressor efficiency requirements has been practically eliminated and the "running in" time greatly reduced. The finishing operation formerly requiring from one to three minutes is now done in eight to ten seconds with a higher quality hole. "Since using this 'Bearing-izing' equipment, we are convinced that we cannot afford to produce quality bores by other methods", states a factory executive of this plant.

In addition to its use in single straight through bores, tools can be made to process two or more diameters at a time, close to the bottom of the shoulder, tapers, angle and flat valve seats etc. and for the external finishing and sizing of shafts and pins. Hardened materials can also be handled within certain limits—depending on individual conditions and the parts to be worked on.

Strength of Materials

COMPRESSION IN COLUMNS

By W. J. McKEEN*

WHEN a support, riser, push-rod, link or any other part is compressed longitudinally and has a length of more than ten times its smallest cross-sectional dimension, it is considered as a column.

In calculating compressive strength of details classed as columns the ordinary rules of compression can not be simply applied. That is, the job of determining what load the detail will support is not found by multiplying its minimum cross-sectional

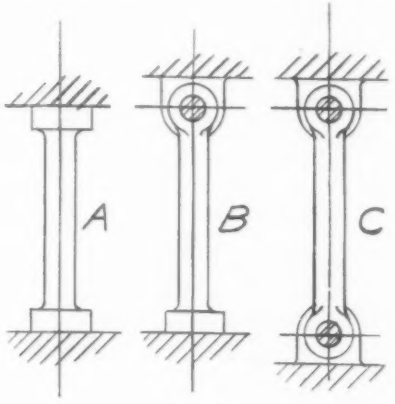


Fig. 1

area by its safe compressive resistance in pounds per square inch. The detail will not carry such a load because of its tendency to bend or buckle due to its length. The strength of a column varies almost inversely as the square of its change in length. For example, if column X is twice as long as column Y the strength of column Y will be $(\frac{1}{2})^2=\frac{1}{4}$ the strength of column X.

The strength of columns is also dependent upon the nature of their end supports. In Fig. 1 are three machine parts which come under the classification of columns. At A is a fixed flat ended column. At B is a column hinged at one end and flat and fixed at the other. C is hinged at both ends.

It has been proven by experiment that column B is 2½ times as strong as column C. Column A is four times as strong as column C.

A well-known formula for determining the strength of columns is Rankine's, which is as follows:

$$W=\frac{S_cA}{f(1+\frac{AL^2}{gI})}.$$

In the above formula W=load, S_c=ultimate compressive strength, A=area, f=factor of safety, L=length of column in inches, I=least moment of inertia of the cross-section, and g is a constant based upon the material used in the column.

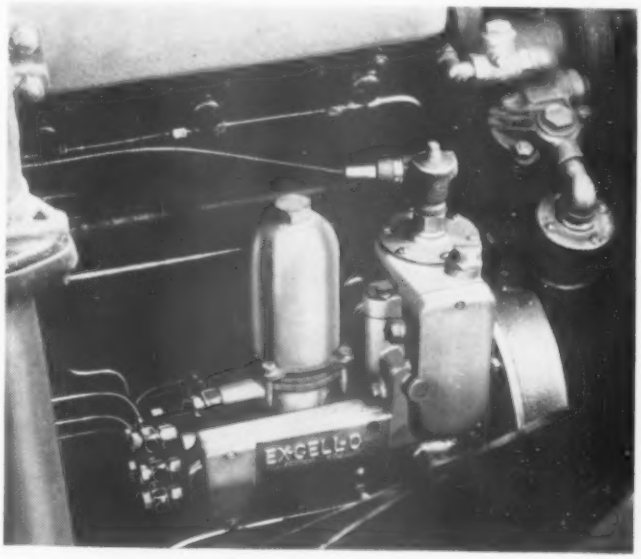
*A.S.T.E. Member

New Diesel Fuel Injection Pump

The long anticipated "made in America" standard Fuel Injection Pump for builders of high speed Diesel engines, which will challenge what virtually amounts to a foreign monopoly, has been announced by the Ex-Cell-O Aircraft and Tool Corporation.

The announcement was made by Mr. C. R. Alden, Research Engineer of the company, Wednesday, June 20th, at the American Society of Mechanical Engineers 7th Annual Convention of the Oil and Gas Power Section at State College, Pennsylvania.

This fuel injection pump has been developed during the past seven years and now after extensive field tests by some of the large engine builders, is ready for production. These tests have proven the pump completely successful. The pump is sturdy, simple, compact and light in weight and any garage mechanic can service it. This is a decided advantage over the complicated pumps which require specially trained men.



NEW EX-CELL-O FUEL INJECTION PUMP INSTALLED ON A TRUCK ENGINE.

In Diesel automotive applications, such as bus and motor truck, no spark plugs, carburetor or electric ignition systems are required. The elimination of these accessories helps to remove many operation difficulties previously experienced. With this type of engine, cheaper and lower grades of fuel are used such as furnace oil, instead of more expensive and highly refined gasoline.

One of the difficult problems in the perfection of light high-speed Diesel engines suitable for motor truck use has been the extreme precision necessary in the manufacture of fuel injection equipment. It must be capable of metering a quantity of fuel as small as fourteen millionths of one pound, compressing it to a pressure of from one thousand to five-thousand pounds per square inch, and injecting

(Continued on page 13)

NEWS NOTES OF INTEREST TO THE TOOL ENGINEER

The race between the big three in the low-price field is getting hotter from a personal standpoint.

Chevrolet, now advertising that its motor is "so good it never needs to be replaced," is aiming directly at the Ford offer to replace its V-8 motors with rebuilt units at approximately $50.

Plymouth is in the fight with the soothing argument that now that all three are priced the same, its superior mechanical features should swing buyers. Chevrolet's shafts at motors other than sixes, of course, leave Plymouth unscathed.

One day less than two weeks ago a number of top executives in the automobile industry descended upon Washington. Their pockets and minds were crammed with plans of the motor industry for next year—how much money they would spend, how many men they would employ in preparation for 1935 models, how far their plans and purchases would penetrate all industry!

Continental Motors Corporation is moving its sales and service offices and part of its engineering department from Detroit to Muskegon, Michigan. Consolidation of these offices in Muskegon indicates eventual removal of all executive offices and practically all production to Muskegon, where Continental was established 30 years ago.

Accurate Tool and Die Co., Joseph Campau Ave., will build a 1-story unit 60x150 ft. to cost about $30,000 including equipment.

Star Tool and Die Works, 2532 Twenty-fourth St., has awarded contract to W. J. Kaufman, 10610 Shoemaker, Detroit, for an addition to its factory.

JUST A LITTLE PERSONAL

Al. M. Sargent—gone since June 14th on a combined business and pleasure trip—or should we say a "pleasure-business" trip. Anyway his route takes him to Toronto, Ottawa, Montreal and down to Concord, N. H., Al's old home town. He plans to return via Syracuse, Rochester and Buffalo. While in New England, Al says he plans some deep sea fishing off the Maine coast.

K. F. Ranger, Tool Engineer of the Chrysler Corporation and a member of The Society, is vacationing in Quebec, Canada.

M. C. Lee, Society member and Chief Tool Engineer at Jefferson Avenue Plant of Chrysler Corporation is now the proud daddy of a daughter born in June. At present Mr. Lee is vacationing in the north woods of Michigan.

RECENT PATENT GRANTS OF INTEREST TO THE TOOL ENGINEER

By WILLIAM JOSEPH BOYD

Washington, D. C. Correspondent *The A.S.T.E. Journal*

After pondering over an almost inexhaustible array of patent grants one becomes somewhat intoxicated with the mechanical, scientific and medical terms that one uses to secure a patent grant from Uncle Sam for the child of his brain.

And after carefully perusing the qualifications appended to the applications for 4,618 patents granted by the United States Patent office during the last thirty days, two have been found to be of interest to the tool engineer.

A patent grant for an interlocking bolt and nut was granted June 19, to Joseph Robert Mercier, of Thilford Mines, Quebec, Canada. In an interlocking bolt and nut, a nut having a thread cut in one direction, and a slot there through opening inwardly through the said thread and interrupting it, an insert piece having a thread cut in the opposite direction from the nut and introduced in said slot and a bolt having double threads cut thereinto and adapted to receive said nut and said locking piece in association therewith.

Isidor Yassemoff, of Detroit, Michigan, has been granted patent No. 1,963,249, for a tool grinder for grinding tools having a cutting edge of tungsten carbide. He combines a grinding shaft, means for rotating said shaft, abrasive wheels mounted on said shaft, a jig supporting member adjacent to said abrasive wheels, a holding jig including a turntable secured to a base, a tool clamp, a universal joint connecting said turntable and said tool clamp, and a spring maintaining the tool in yielding contact with the abrasive wheels.

The National Automobile Chamber of Commerce has just announced that it will not sponsor autoshows at New York and Chicago. Will that mean tool rooms will have more time—or will the same old rush prevail?

Most tool engineers are aware that **Ford plans new models.** How extensive the tooling program will be is not yet reported.

NEW FUEL INJECTION PUMP

(Continued from page 11)

it in the form of a highly atomized spray into the engine cylinder in a time as short as two-thousandths of a second.

The pump consists of two major parts, the drive unit and the hydraulic unit. The drive unit is mounted directly on the engine, making it practically a part of the engine structure. This enables the engine builder to eliminate several parts and operations and will not permit misalignment which causes rapid wear.

The hydraulic unit is removable and is furnished as a sealed assembly. This requires a minimum amount of time for servicing, all of the precision or hydraulic parts of the pump being replaced as a unit.

Incorporated as an integral part located on top of the fuel injection pump is a secondary filtering unit. The fuel oil must pass through this filter before entering the hydraulic unit. The foreign material is thus removed that might otherwise damage the system.

The Ex-Cell-O Fuel Pump may be furnished with a governor in which can be incorporated features adapting it to automotive, marine, industrial or constant speed service.

The truck, shown in above illustration, when fully loaded has a gross weight of 20,000 pounds, yet it will average better than fifteen miles per gallon of fuel oil at an approximate cost of one-fifth of a cent per mile using three cents per gallon (wholesale) oil. The same truck powered with a gasoline engine of equivalent bore and stroke would not average better than eight miles per gallon. The Diesel engine will also out-perform the gasoline engine "pulling" at low speeds.

ALL MEMBERS PLEASE NOTE

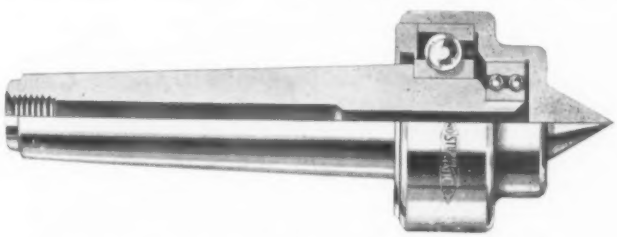
There will be no regular monthly meeting, in Detroit, of The American Society of Tool Engineers in July. The first regular meeting is scheduled for September.

INCORPORATED

Giern & Anholtt Tool Co. of Detroit, Mich., manufacturers of special tools and a complete line of tungsten carbide boring tools.

The Giern & Anholtt Co. succeeds the National Boring Tool Co. The latter's entire assets and good will is purchased by the former and continued as heretofore.

The company specializes in adjustable cutters, boring bars, rotating jig and pilot bushings also fixtures designed for production use of tungsten carbide boring and reaming. James B. Giern is the president and A. P. Anholtt Vice Pres. and Sec.



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OUTING—HIGHLY SUCCESSFUL

(Continued from page 10)

press the opinion that, inasmuch as they made only one less run than the Juniors, they should have been awarded the honors.

Following the battle on the diamond, the athletic events were run off, and beautiful and valuable prizes presented to the winners. The peanut scramble for boys and girls under eight was won by Patsy Smith. Camilla Rosowicz won the girls' rope skipping race, while Ethelda Gertiser led the field in the hundred-yard dash for girls. Mrs. Hecker showed herself fleet of foot by taking the hundred-yard dash for married ladies. In the fat men's race Dave Forsman crashed over the finishing line with the velocity of an express train and with a momentum that was terrific to behold. Mrs. Brandt showed astonishing adroitness in balancing a peanut on a table knife while running at great speed, to take the prize for the ladies' peanut and knife race. Several men came to grief and tumbled through the dust in the potato sack race, which was taken by Mr. De Hait. Mrs. Leonard kicked a slipper an astonishing distance in the slipper throwing contest for the ladies. Mr. and Mrs. Gertiser won hands down in the needle threading contest for married couples. Mrs. Leonard, in the ladies' rolling pin slinging contest, not only hit the mark from the greatest distance, but also knocked the wooden dummy over with her winning throw. Melvin Weinberg won the hundred-yard dash for Junior members, while Otto Winter won the Senior contest.

And now we come to the gala event of the day, the high spot in the day's mirth-provoking activities. We are referring to the "fresh fruit" contest. The "fresh fruit" turned out to be a dozen carefully selected eggs, which twelve pairs of partners tossed back and forth to one another at ever increasing distances until all were eliminated. Those who staved off a mishap in this contest the longest were Messrs. Weinberg and De Hait, Peterson and Siarto, and Gertisner and Forsman. As a result of this thrilling sport, several pairs of trousers will require a trip to the cleaners.

The sports and games ended, the younger people, and also a few of the elder, spent an enjoyable couple of hours dancing to the snappy jazz of thise sterling entertainers, Messrs. Stott and Granville, who have so often contributed their talent on the banjo and the piano to The Society.

Not until darkness sent the reluctant out-door fans home did the interesting activities of the annual outing cease. Heartiest congratulations must be tendered the committee in charge, under the direction of past president Joe Siegel, splendidly supported by Herbert Royle, who arranged and carried out so well the interesting and entertaining program for the day.

Everyone will look forward to next year's A.S.T.E. annual outing with eager anticipation. We all hope that the attendance next year shows an increase as great as this one.

Eclipse Counterbore Company 20th Anniversary Celebration

The Eclipse Counterbore Company commemorated its 20th Anniversary with a sales convention and celebration at its offices at 7410 St. Aubin Avenue, Detroit, recently.

During the two days over 250 men; executives, superintendents and tool engineers from various factories in Detroit and other cities and several Eclipse field sales representatives, as well as many personal friends of members of the Eclipse organization, gathered and were taken on a tour of inspection throughout the factory.

A continuous program of entertainment including many musical numbers, together with an appetizing buffet supper, was enjoyed by the guests who assisted in making the Eclipse 20th Birthday party a long-to-be-remembered occasion.

Among the guests were the President and two past-presidents of The American Society of Tool Engineers and, of course many other Society members.

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LINCOLN PARK TOOL COMPANY

LINCOLN PARK, MICHIGAN

Announcement

from

Giern & Anholtt Tool Co.

The National Boring Tool Co. will henceforth be known as Giern & Anholtt Tool Co.

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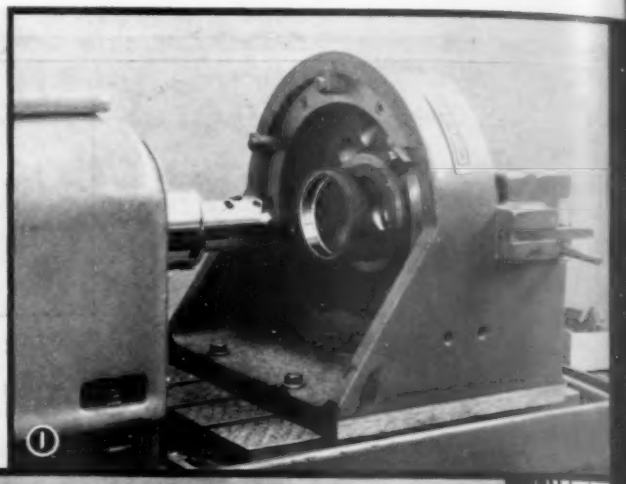
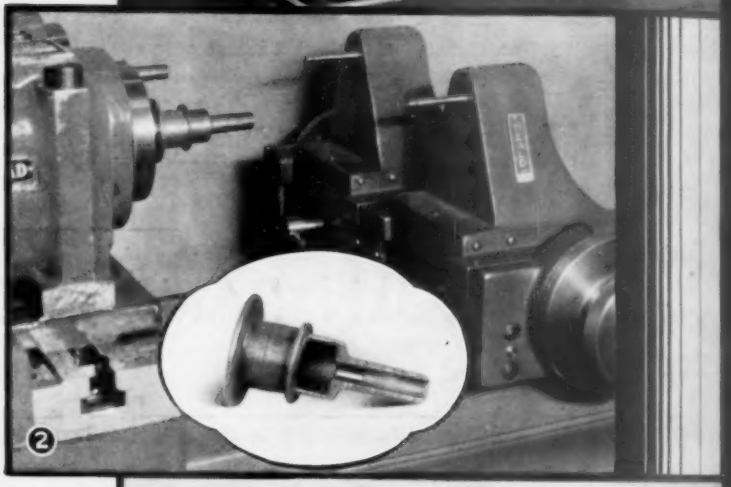
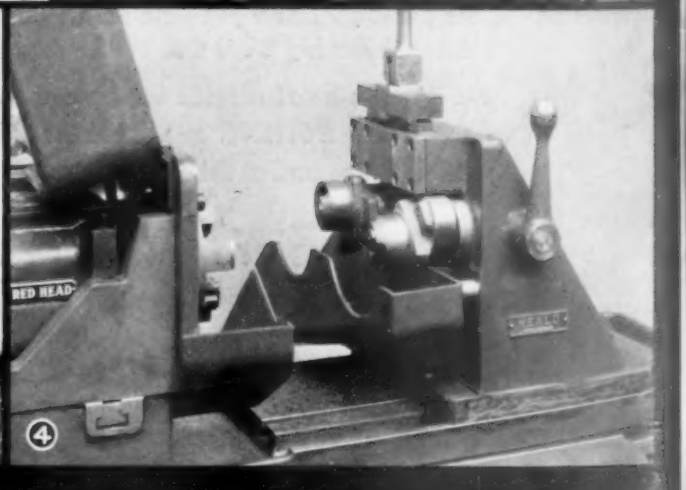
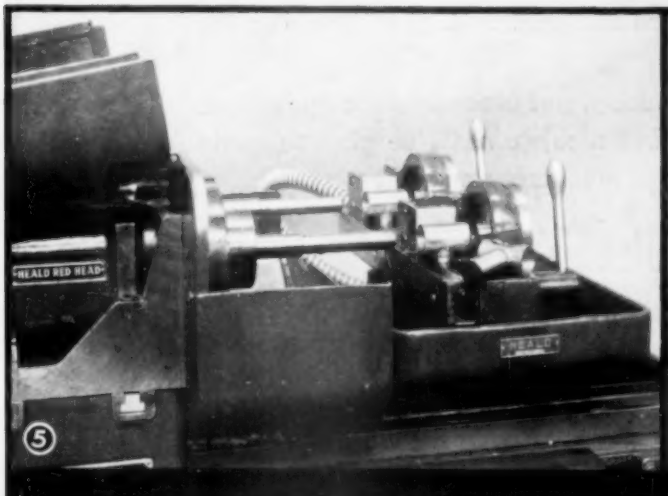
Worcester, Massachusetts

1—Bore-Matic boring and facing cast iron bearing cages.
2—Bore-Matic boring whorls for textile machinery.
3—Boring steel connecting rod and cast iron piston.
4—Bore Matic turning cast iron eccentric.
5—Boring a cylinder with outboard support.